North Dakota Alternate Assessment 1 (NDAA1)

SCIENCE - GRADE 11

For students with significant cognitive disabilities assessed against alternate achievement standards

Picture from Microsoft Clip Art

NORTH DAKOTA STATE ASSESSMENT PROGRAM

North Dakota Department of Public Instruction
Kirsten Baesler, State Superintendent

Welcome to the 2015-16 North Dakota Alternate Assessment 1 for Science. Science is assessed in grade 11 in North Dakota.

The science test includes six assessment activities based on each of the six North Dakota State Science Content Standards. These six activities will range in complexity from less complex, to more complex, and most complex. All students will be tested on the same six items. Each will include the opportunity to first teach the concept and then to assess it.

Materials are provided for each item. Separate Item Data Sheets are provided for each of the six items. These Item Data Sheets are to be used only for the item specified. Each contains the questions, directions, and data collection space for the item.

Once all six of these Data Sheets are completed the data can be entered into the online NDAA1 portal. You will be entering each response (correct or incorrect).

To start this test:

You will need to print this document on a color printer (if possible).

You may want to mount the pictures onto a half sheet of white or neutral construction paper.

Test Item #1

Standard 1: Students understand the unifying concepts and processes of science.

Benchmark 1.2: Describe the interaction of components within a system (e.g., interactions between living and nonliving components of an ecosystem, interaction between organelles of a cell).

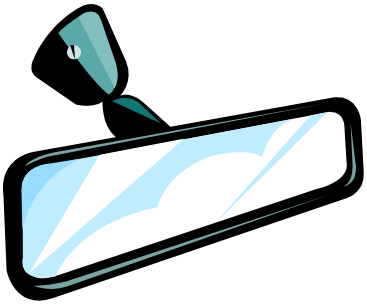
Suggested Instructional Activities (before testing)
During science instruction, students should have opportunities to see, use, and replicate diagrams and models (e.g., how body systems and mechanical devices work, cell processes, interrelationships of ecosystems) and be able to recognize and describe interrelationships of parts within the system. Students can answer questions about, apply labels to, and create various models and visuals to indicate that they understand the key concepts of how different systems work. Students can take common objects apart to see what they are made of and how they work.

Test Item: Given visuals and descriptions of parts of a common object (e.g., bike, model car, telephone, model plane), TSW label parts on a diagram or indicate that the part is not a part of the system.

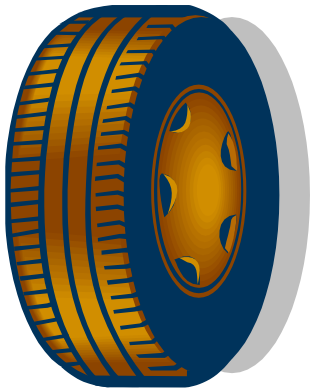
Teacher test directions: cut apart the visuals and ask the questions from the Data Sheet. Use the car as the main visual (place it on the table or board in front of the student). Show the pictures of the parts named in each of the questions as the question is asked of the student.

Pictures taken from Microsoft Clip Art

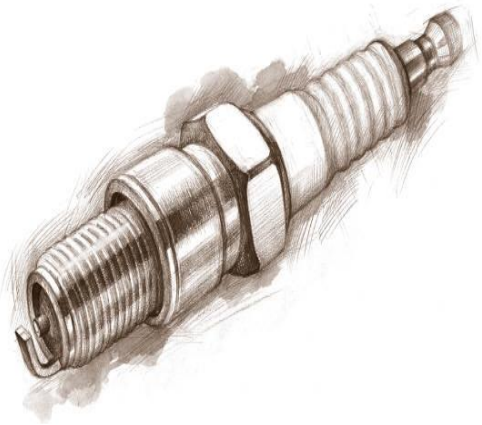
Steering wheel



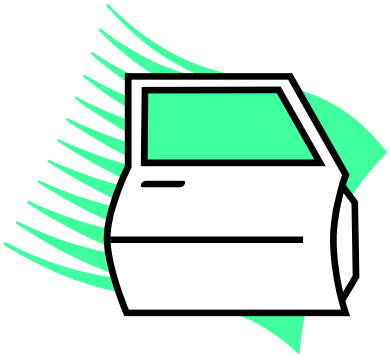
rear view mirror



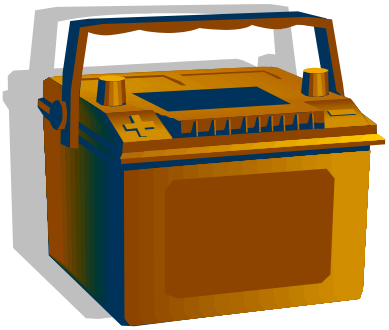
tire



Spark plug



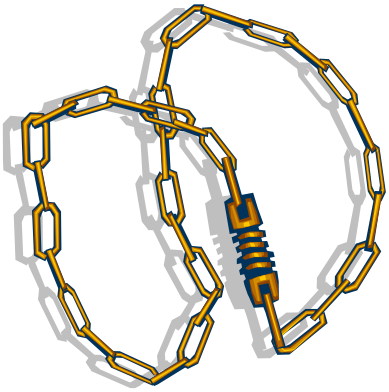
door



battery

Pictures taken from Microsoft Clip Art

Plant



chain lock

Coffee cup

trunk

keys

Pictures taken from Microsoft Clip Art

Data Sheet for Test Item # 1 **Name**_____

Correct + Incorrect -

Question Content	DATA
1. Is a **tire** part of a car system? Yes or No	
2. Are **keys** part of a car system? Yes or No	
3. Is a **chain lock** part of a car system? Yes or No	
4. Is a **spark plug** part of a car system? Yes or No	
5. Is a **steering wheel** part of a car system? Yes or No	
6. Is a **plant** part of a car system? Yes or No	
7. Is a **trunk** part of a car system? Yes or No	
8. Is a **rear view mirror** part of a car system? Yes or No	
9. Is a **battery** part of a car system? Yes or No	
10. Is a **cup of coffee** part of a car system? Yes or No	
TOTAL Correct Answers	Total

No additional verbal, gestural, or physical prompting is allowed.

Pictures taken from Microsoft Clip Art

Test Item #2

Standard 2: Students use the process of science inquiry.

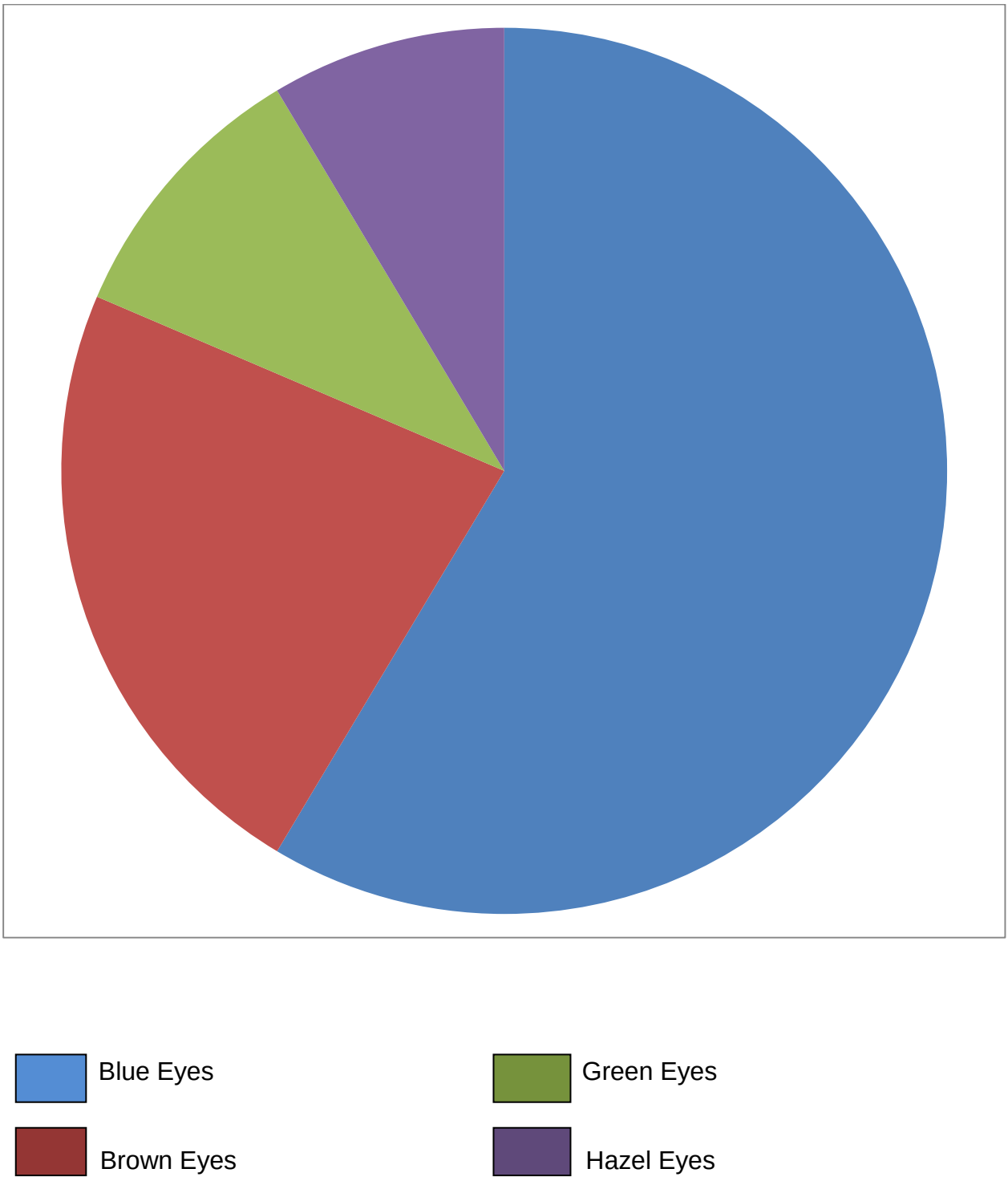
Benchmark 2.8: Analyze data found in tables, charts, and graphs to formulate conclusions.

Suggested Instructional Activities (before testing)
Students who have been conducting simple investigations in the classroom will do much better on this assessment task than those who have not had opportunities to do so. Guide students in recording, organizing, and analyzing data from class investigations in order to draw conclusions using their observations and evidence. Students need to learn to interpret information from a variety of graphs (bar, line, circle, etc.) and other visuals (diagrams, charts, tables).
An activity you might want to try is collecting data on three different kinds of candy bars in the classroom and which are the favorites of each student. Graph the results and have the students help with data collection and putting the graph together and then talk about what the different graphed items mean or show.

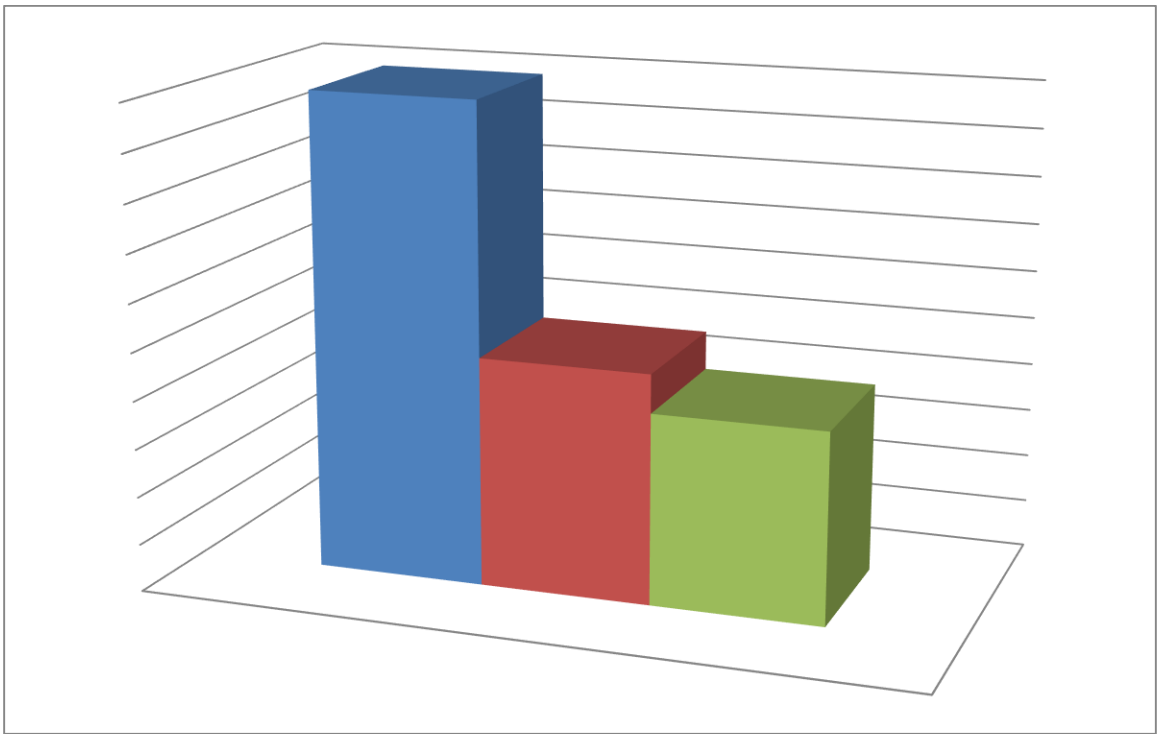
Test Item: Given a variety of representations, TSW identify the type of representation (e.g., bar graph, line graph, circle graph, T-chart, diagram) and will answer questions about what it shows.

Teacher Directions: You are given two different graphs which display data on two different questions. The first is a PIE CHART which displays the results of data collected on eye color from a group. Show the student the chart and identify what the different colored sections indicate according to the menu. Then ask the questions provided on the Data Sheet for this test item.
Repeat the process for the bar graph.

Eye Color Pie Chart



Pictures taken from Microsoft Clip Art



Favorite Pizza Bar Graph

Pepperoni Pizza

Cheese Pizza

Supreme (Everything) Pizza

Pictures taken from Microsoft Clip Art

Data Sheet for Test Item # 2 **Name**_____

Question Content	DATA
1. Look at the pie chart. What color eyes do most of the group have? Green or Blue?	
2. Look at the pie chart. What is the next largest color in the group? Green or brown?	
3. There are two colors that are about the same in number. Which ones are those? Green and hazel or brown and blue?	
4. Look at the chart. Which two colors are most common in this group? Green and hazel or brown and blue?	
5. Look at the Bar Graph. Which kind of pizza is the most popular? Cheese or pepperoni?	
6. What is the least favorite pizza? Cheese or Supreme	
7. What kind of pizza comes in second for favorite? Pepperoni or Cheese	
8. Based on the information on this graph, if you had to order four pizzas for this group, which kind of pizza would you order two of? Supreme or Pepperoni	
9. What kind of pizza would you choose for the one other pizza? Cheese or Pepperoni	

Correct + Incorrect -

Pictures taken from Microsoft Clip Art

10. What would the third kind of pizza be? Cheese or Supreme	
TOTAL Correct Answers	Total

No additional verbal, gestural, or physical prompting is allowed.

Test Item #3

Standard 3: Students understand the basic concepts and principles of physical science.

Benchmark 3.2: Classify changes in matter as physical or chemical.

Suggested Instructional Activities (before testing)
Students investigate how different elements and substances have different physical properties and how those properties may change when heated or oxidized. Students understand that only in physical changes (evaporating, ripping, cutting, etc.) are the properties of the original material, element, or object unchanged. Many websites provide instructional materials on physical and chemical changes with simple and safe experiments.

Test Item: Identify examples as being a chemical or physical change.

Materials: You will use real objects for this item.
Granular sugar and water
Kool-aid and water
Paper and shredder
Ice cubes
Egg and frying pan or dish and microwave
Nail with no rust and rusty nail
Green banana
Old piece of clothing and scissor

Teacher directions:
Follow the directions in the questions on the Data Sheet for testing.

Pictures taken from Microsoft Clip Art

Data Sheet for Test Item # 3 **Name**_____

Correct + Incorrect -

Question Content	DATA
1. Observe the change from raw uncooked egg to cooked egg. Is this a chemical or physical change?	
2. Observe the change from glass of water and granular sugar to sugar water. Is this a chemical or physical change?	
3. Observe the change from green banana to yellow banana. Is this a chemical or physical change?	
4. Observe the change from a piece of paper before shredding and after being shredded. Is this a chemical or physical change?	
5. Observe the change from nail with no rust to rusty nail through oxidation. Is this a chemical or physical change?	
6. Observe the change from adding Kool-Aid powder to a glass of water. Is this a chemical or physical change?	
7. Observe the change when an ice cube sits out on a plate for an hour. Is this a chemical or physical change?	
8. Observe that banana as it turns from yellow to brown. Is this a chemical or physical change?	
9. Observe the change to a piece of clothing when it is cut with a scissors. Is this a chemical or physical change?	
10. Observe the change when the piece of clothing (after cut) is soaked in water. Is this a chemical or physical change?	

Pictures taken from Microsoft Clip Art

TOTAL Correct Answers	Total

Pictures taken from Microsoft Clip Art

Test Item #4

Standard 4: Students understand the basic concepts and principles of life science

Benchmark 4.10: Explain the energy and organization related to trophic pyramids.

Instruction: Suggested Instructional Activities (before testing)

Students can investigate and create energy pyramids that show how energy flows from plants to herbivores, and from plant eaters to carnivores and omnivores. Students need to know that the sun is the first source of energy, and the meaning of the terms: producer, consumer (herbivore, carnivore, and omnivore), predator, and prey. Students learn the levels of an energy pyramid. The focus of instruction should be on how energy is transferred up the levels of the pyramid and where the most energy resides (*always* at the lower levels, comparatively). Where there are the most organisms, there will be the most energy.

Many excellent visual models of different energy pyramids can be found on the Internet.

Internet: Where to find possible supporting teaching materials (examples only)
Google, Ask.com, or Wikipedia
Enter key words: energy pyramid, trophic level, photosynthesis, energy pyramid, food chain, etc.

Test Item: When shown an image of an energy pyramid and given (at least 4) examples of organisms, TSW indicate where each organism goes in the pyramid to indicate whether it is a producer, a primary consumer, a secondary consumer, or a tertiary consumer (top level predator). TSW explain where the most and least energy is in the energy pyramid.

Teacher directions for testing:

Print the model of the energy/trophic pyramid and make copies of the pictures provided. Teachers may want to enlarge the pyramid. Label the four levels of the pyramid. Teacher may name the levels of the pyramid.

1. Copy the Item Data Sheet and follow the questions in the order they are written.
2. Present student with the enlarged energy pyramid.
3. **Say**, "This is an energy pyramid."
4. Give the student one organism and describe or say what it is.
5. **Say**, "Where will this _____ go in an energy pyramid? Is this a producer, or a consumer? Think about what it eats and where it gets its energy. Place this ____ on the level where you think it belongs."

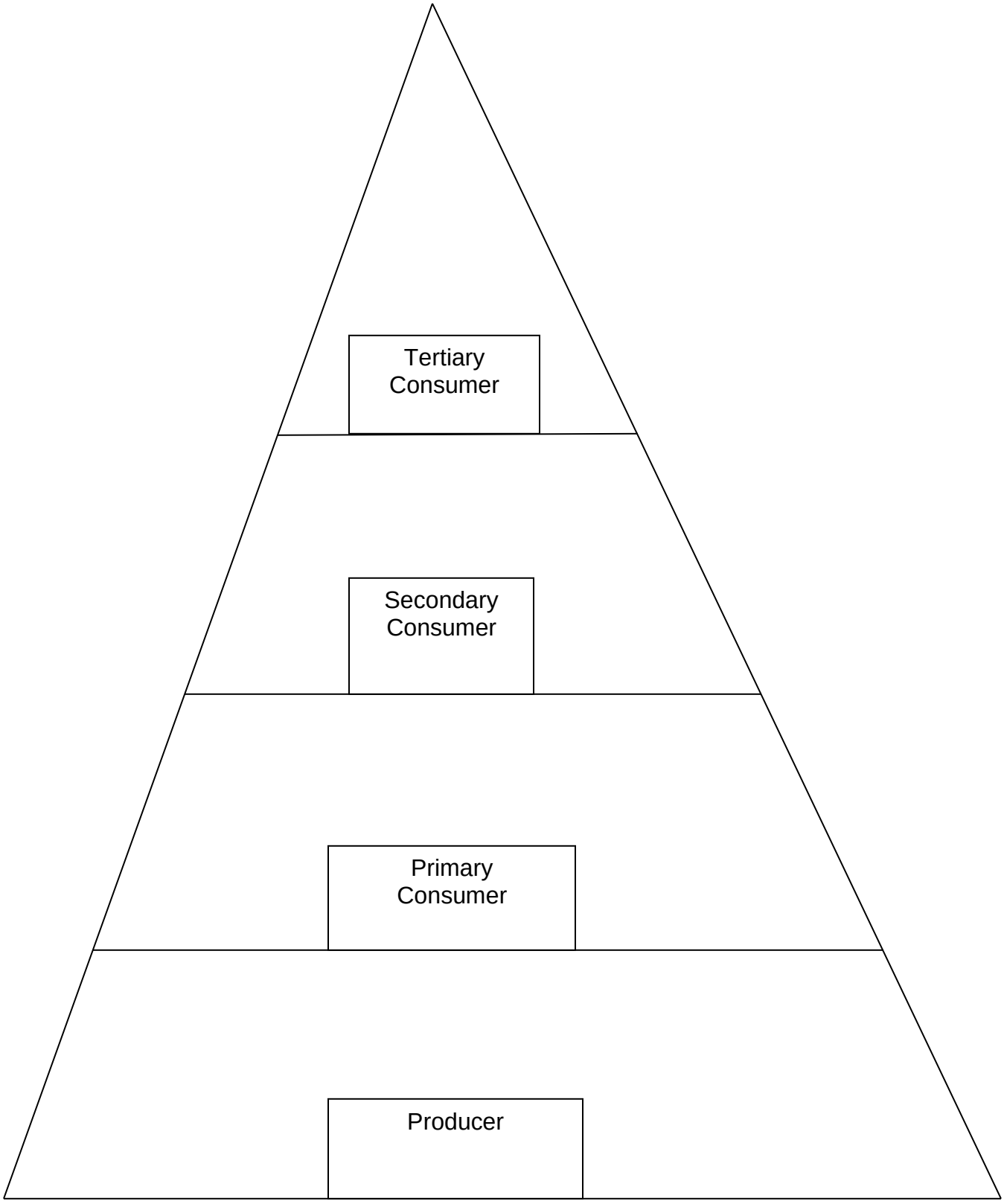
Give the student another organism and follow the same procedure. Teachers can describe what the organism does, but not what it eats. Do not define producer and consumer.

Pictures taken from Microsoft Clip Art

The student may respond in whatever means necessary to answer each question (e.g., point, verbal response, eye gaze, yes/no, gesture, communication broad) as appropriate to the student's communication mode.

Pictures taken from Microsoft Clip Art

This is an example of an energy pyramid. You will want to make a large one for the student to use.



Pictures taken from Microsoft Clip Art

Pictures taken from Microsoft Clip Art

Pictures taken from Microsoft Clip Art

Pictures taken from Microsoft Clip Art

Question Content	Trial One
1. Where are **Vegetables** located on the energy pyramid? (Producers / get eaten)	
2. Where is a **Cow** located on the energy pyramid? (Primary consumers/ eat plants)	
3 . Where is a **Fox** located on the energy pyramid? (Secondary Consumers /eat animals)	
4 Where is **Grass** located on the energy pyramid? (Producers / get eaten)	
5. Where is an **Caterpillar** located on the energy pyramid? (Primary consumers/ eat plants)	
6. Where is a **Mouse** located on the energy pyramid? (Primary consumers/ eat plants)	
7. Where is an **Eagle** located on the energy pyramid? (Tertiary consumers)	
8. **Where is the most ENERGY in <u>all</u> energy pyramid?** (lowest)	
9. **Where is the least ENERGY in <u>all</u> energy pyramid?** (top)	
10. **Where are the MOST organisms located in <u>all</u> energy pyramids?** (lowest)	
TOTAL of All <u>Correct Answers</u>	Total One:

Item #4 Data Sheet
Name: _____

_____

_____

+ for correct answer

- for incorrect

No additional verbal, gestural, or physical prompting is allowed.

Pictures taken from Microsoft Clip Art

Test Item #5

Standard 5: Students understand the basic concepts and principles of earth and space science

Benchmark 5.6: Explain the effects of human activities (e.g., dams, levees, farming practices, deforestation, land-use practices, land-management strategies) on the environment.

Suggested Instructional Activities (before testing)

Students learn about the impact of human activity on the environment. Some of this activity results in good things: new roads built, more land for farming, etc. Some human activities are bad for the environment: water and air pollution, soil erosion, loss of animal habitat. Students can learn about land management practices in North Dakota and both the positive and negative effects.

Test Item: Given examples of human impact on the environment, TSW identify possible positive and negative results.

1

Pictures taken from Microsoft Clip Art

2

3

Pictures taken from Microsoft Clip Art

4

Pictures taken from Microsoft Clip Art

5

Pictures taken from Microsoft Clip Art

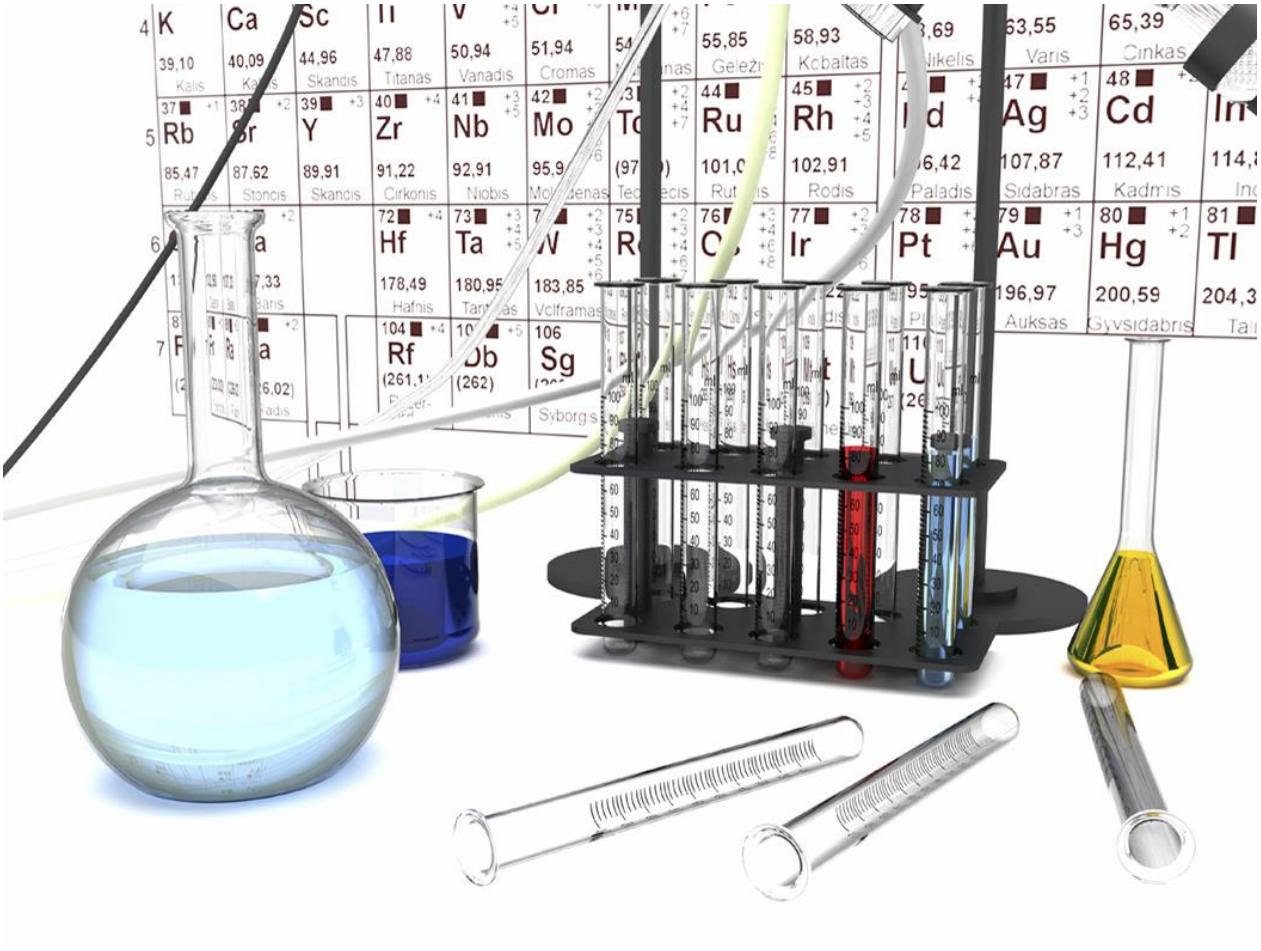
6

Pictures taken from Microsoft Clip Art

7

Pictures taken from Microsoft Clip Art

8



9

Pictures taken from Microsoft Clip Art

Data Sheet for Test Item # 5 **Name**_____

Correct + **Incorrect -**

Question Content	DATA
1. Show picture # **8**. Ask, "Could a healthy child be a positive result of technology? Yes or No	
2. Show picture #**4**. Ask, "Could the amount of garbage we create have a negative impact on the earth?" Yes or No	
3. Show picture #**2**. Ask, "Can polluted water cause illness?" Yes or No	
4. Show picture #**6**. Ask ,"Can medicine have a positive impact on humans?" Yes or No	
5. Show picture #**7**. Ask, "Can wind turbines provide power that is clean and keeps the air clean?" Yes or No	
6. Show picture #**1**. Ask, "Is air pollution a positive impact on the environment?" Yes or No	
7. Show picture #**9**. Ask, "Can scientific research provide cures for illness?" Yes or No	
8. Show picture # **5**. Ask, "Can a child get sick from the environment?" Yes or No	
9. Show picture #**3**. Ask, "Can animals suffer from pollution in the environment?" Yes or No	
10. Show picture # **3**. Ask, "Can water that is harmful to fish be good for humans?" Yes or No	
TOTAL Correct Answers	Total

No additional verbal, gestural, or physical prompting is allowed.

Pictures taken from Microsoft Clip Art

Test Item #6

Standard 6: Students understand relations between science and technology.

Benchmark 6.1: Use appropriate technologies and techniques to solve a problem (e.g. computer-assisted tools, Internet, research skills).

Suggested Instructional Activities (before testing)
Students recognize a variety of common tools/technology and their uses in the real world. Students are encouraged to use a variety of technologies (calculator, printer, computer, email, Internet, science data collection tools, assistive technology) in school and at home for specific purposes. Field trips to different local sites will allow students to explore how technology is being used in different fields of business and careers.

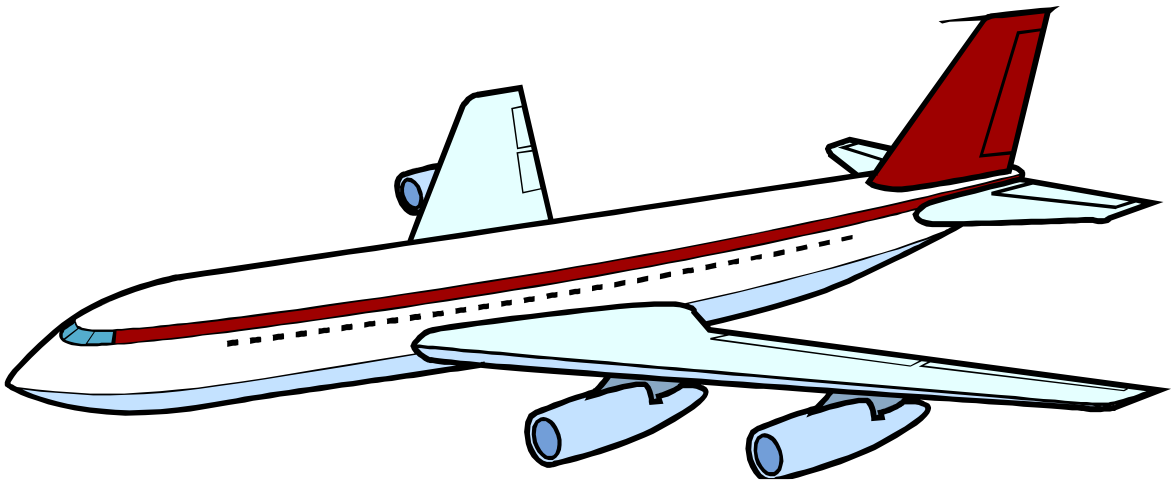
Test Item: When given a description of a specific task or problem to solve, TSW select an appropriate technology that helps someone complete the task.

Teacher test directions:
Use the pictures provided and ask the questions from the Data Sheet for this test item.

Calculator

Cell Phone

Pictures taken from Microsoft Clip Art



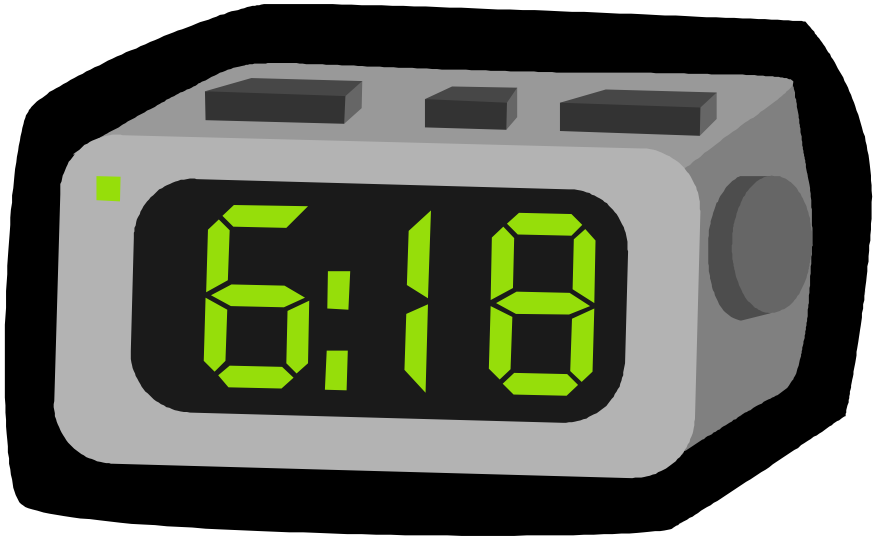
Airplane

Car

Pictures taken from Microsoft Clip Art

Printer

Pencil and Paper



Alarm Clock

Pictures taken from Microsoft Clip Art

Timer

Computer

Pictures taken from Microsoft Clip Art

Pictures taken from Microsoft Clip Art

Data Sheet for Test Item # 6 **Name**_____

Correct + **Incorrect -**

Question Content	DATA
1. Show **Airplane** and **Car**. Ask, "Which would get you across the country the fastest?"	
2. Show **Timer** and **Alarm Clock**. Ask, "Which would you need to wake you up very early tomorrow morning?"	
3. Show **Pencil & Paper** and **Computer**. Ask, "Which would be best for taking a phone message?"	
4. Show **Printer** and **Pencil and Paper**. Ask, "Which would you use to make a professional looking document?"	
5. Show **Calculator** and **Printer**. Ask, "Which will be helpful in adding up the cost of groceries?"	
6. Show **Alarm Clock** and **Timer.** Ask, "Which would work best to keep track of the time needed to cook a pizza?"	
7. Show **Computer** and **Pencil & Paper**. Ask, "Which will work best to write a research paper about technology?"	
8. Show **Car** and **Cell Phone**. Ask, "Which will work best to go to the grocery store to pick up groceries?"	
9. Show **Cell Phone** and **Pencil & Paper**. Ask, "Which will work best to ask for help in an emergency?"	
10. Show **Cell Phone** and **Computer**. Ask, "Which will work best to send a message with an attachment?"	
TOTAL Correct Answers	Total

No additional verbal, gestural, or physical prompting is allowed.

Pictures taken from Microsoft Clip Art